D.B.F. Dayanand College of Arts and Science, Solapur

COURSE OUTCOME

Name of Department: Chemistry

B.Sc.II		
NAME OF SUBJECT: Geo Chemistry		
SEM III		
COURSE NUMBER (PAPER NUMBER) P-I		
TITLE OF COURSE (NAME OF PAPER): Introduction to Geo Chemistry		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Phase Rule Unit 1- Gibbs phase rule, one component system (water and sulphur), Goldschmidt's Mineralogical phase rule	**To study the:** Gibb's Phase Rule , One Component System-Water System , Sulphur System ,Gold smidth's Minerological Phase Rule	**Students get the Knowledge of** Gibb's Phase Rule , One Component System-Water System , Sulphur System ,Gold smidth's Minerological Phase Rule
Colloids Definition, properties of colloids like electric charges, ion exchange and stability, kinds of colloidal system, silica as chemical sediment, clay minerals as colloids; Structure and properties of important clay minerals; Classification of clay minerals	**To understand the properties of Colloidal solution** – Definition, properties of colloids like electric charges, ion exchange and stability, kinds of colloidal system, silica as chemical sediment, clay minerals as colloids; Structure and properties of important clay minerals; Classification of clay minerals	**Students should understand the properties of Colloidal solution** – Definition, properties of colloids like electric charges, ion exchange and stability, kinds of colloidal system, silica as chemical sediment, clay minerals as colloids; Structure and properties of important clay minerals; Classification of clay minerals

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COURSE OUTCOME

Name of Department: Chemistry

B.Sc.II		
NAME OF SUBJECT: Geo Chemistry		
SEM IV		
COURSE NUMBER (PAPER NUMBER) P-III		
TITLE OF COURSE (NAME OF PAPER): Principals of Geo Chemistry		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Chemical Equilibrium The law of mass action, an example of equilibrium, hydrogen chloride, the effect of temperature, other examples as CO_2 in water and calcium sulphate. Le chateliar's rule, stability, conventions of chemical equilibrium	**To study the basic concept of** The law of mass action, an example of equilibrium, hydrogen chloride, the effect of temperature, other examples as CO_2 in water and calcium sulphate. Le chateliar's rule, stability, conventions of chemical equilibrium	**Students get the Knowledge of** The law of mass action, an example of equilibrium, hydrogen chloride, the effect of temperature, other examples as CO_2 in water and calcium sulphate. Le chateliar's rule, stability, conventions of chemical equilibrium
Acids and Bases Chemical definition, Geologic usage, pH, Hydrolysis of Na_2CO_3; Estimating ionic concentration, carbonate	**To study the basic concepts of** Chemical definition, Geologic usage, pH, Hydrolysis of Na_2CO_3; Estimating ionic concentration, carbonate	**Students should understand the basic concepts of** Chemical definition, Geologic usage, pH, Hydrolysis of Na_2CO_3;

equilibrium. Temperature changes; Changes in pressure & organic activity.	equilibrium. Temperature changes; Changes in pressure & organic activity.	Estimating ionic concentration, carbonate equilibrium. Temperature changes; Changes in pressure & organic activity.

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COURSE OUTCOME

Name of Department: Chemistry

B. Sc III		
NAME OF SUBJECT: Physical Chemistry		
SEM VI		
COURSE NUMBER (PAPER NUMBER) XIII		
TITLE OF COURSE (NAME OF PAPER): Physical Chemistry		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Solution 2.1 Introduction 2.2 Ideal solutions, Raoult's law, vapour pressure of ideal and non ideal solutions of miscible liquids. 2.3 Vapour pressure and boiling point diagrams of miscible liquids. Type I : Systems with intermediate total vapour pressure. (i.e. System in which B.P. increases regularly - Zeotropic) Type II : Systems with a maximum in the total vapour pressure. (i.e. System with a B.P. minimum - Azeotropic) Type III :Systems with a minimum in the total vapour pressure. (i.e. System with a B.P. Maximum - Azeotropic) Distillation of miscible liquid pairs. 2.4 Solubility of partially miscible liquids.	To understand the basic concept of Normality, Molarity, Molality, Mole fraction, 2.1 Introduction 2.2 Ideal solutions, Raoult's law, vapour pressure of ideal and non ideal solutions of miscible liquids. 2.3 Vapour pressure and boiling point diagrams of miscible liquids. Type I : Systems with intermediate total vapour pressure. (i.e. System in which B.P. increases regularly - Zeotropic) Type II : Systems with a maximum in the total vapour pressure. (i.e. System with a B.P. minimum - Azeotropic) Type III :Systems with a minimum in the total vapour pressure. (i.e. System with a B.P. Maximum - Azeotropic) Distillation of miscible liquid pairs.	**Students will gain the understanding of** the basic concept of Normality, Molarity, Molality, Mole fraction, Raoult's law,Applications of Raoult's law 2.1 Introduction 2.2 Ideal solutions, Raoult's law, vapour pressure of ideal and non ideal solutions of miscible liquids. 2.3 Vapour pressure and boiling point diagrams of miscible liquids. Type I : Systems with intermediate total vapour pressure. (i.e. System in which B.P. increases regularly - Zeotropic) Type II : Systems with a maximum in the total vapour pressure. (i.e. System with a B.P. minimum - Azeotropic) Type III :Systems with a minimum in the total vapour pressure. (i.e. System with a B.P. Maximum - Azeotropic) Distillation of miscible liquid pairs. 2.4 Solubility of partially miscible liquids.

(i) Maximum solution temperature type : Phenol - water system. (ii) Minimum solution temperature type : Triethyl amine - water system. (iii) Maximum and minimum solution temperature type : Nicotine - water system.	2.4 Solubility of partially miscible liquids. (i) Maximum solution temperature type : Phenol - water system. (ii) Minimum solution temperature type : Triethyl amine - water system. (iii) Maximum and minimum solution temperature type : Nicotine - water system.	(i) Maximum solution temperature type : Phenol - water system. (ii) Minimum solution temperature type : Triethyl amine - water system. (iii) Maximum and minimum solution temperature type : Nicotine - water system.

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COURSE OUTCOME

Name of Department: Chemistry

M.Sc.I		
NAME OF SUBJECT: Physical Chemistry		
SEM II		
COURSE NUMBER (PAPER NUMBER) SCT – 203A		
TITLE OF COURSE (NAME OF PAPER): Physical Chemistry II		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Photochemistry Introduction, Absorption of light and nature of absorption spectra, electronic transitions, Franck–Condon principle, electronic excitation, photodissociation and Predissocition, photoreduction, photooxidation, photochemistry in environment (Green house effect, ozone depletion).	**To know the basic concept of** Introduction, Absorption of light and nature of absorption spectra, electronic transitions, Franck–Condon principle, electronic excitation, photodissociation and Predissocition, photoreduction, photooxidation, photochemistry in environment (Green house effect, ozone depletion).	**Students should know the basic concept of** Introduction, Absorption of light and nature of absorption spectra, electronic transitions, Franck–Condon principle, electronic excitation, photodissociation and Predissocition, photoreduction, photooxidation, photochemistry in environment (Green house effect, ozone depletion).

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COURSE OUTCOME

Name of Department: Chemistry

M.Sc.II		
NAME OF SUBJECT: Physical Chemistry		
SEM III		
COURSE NUMBER (PAPER NUMBER) PCH –303		
TITLE OF COURSE (NAME OF PAPER): Molecular structure-I		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Introduction of Molecular spectro scopy and Rotational Spectra Characterization of electromagnetic radiation. The quantification of energy, Regions of Spectrum, transition probability, the width and intensity of spectral transitions. Classification of molecules according to their moment of inertia. Rotational spectra of rigid and non-rigid diatomic molecules. Selection rules. The intensities of spectral lines. The effect of	**To Review of the knowledge of spectrroctry,** Characterization of electromagnetic radiation. The quantification of energy, Regions of Spectrum, transition probability, the width and intensity of spectral transitions. Classification of molecules according to their moment of inertia. Rotational spectra of rigid and non-rigid diatomic molecules. Selection rules. The intensities of spectral lines. The effect of isotopic substitution. Polyatomic molecules. The Stark	**Students should review of the knowledge of spectrroctry**, Characterization of electromagnetic radiation. The quantification of energy, Regions of Spectrum, transition probability, the width and intensity of spectral transitions. Classification of molecules according to their moment of inertia. Rotational spectra of rigid and non-rigid diatomic molecules. Selection rules. The intensities of spectral lines. The effect of isotopic substitution. Polyatomic molecules. The Stark effect. Calculations of rotational constant B for real spectrum eg CO, HCl, NO etc.

isotopic substitution. Polyatomic molecules. The Stark effect. Calculations of rotational constant B for real spectrum eg CO, HCl, NO etc. Instrumentation, source, waveguide and detectors	effect. Calculations of rotational constant B for real spectrum eg CO, HCl, NO etc. Instrumentation, source, waveguide and detectors	Instrumentation, source, waveguide and detectors

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D.B.F. Dayanand College of Arts and Science, Solapur

COURSE OUTCOME

Name of Department: Chemistry

M.Sc.II		
NAME OF SUBJECT: Physical Chemistry		
SEM IV		
COURSE NUMBER (PAPER NUMBER) 403		
TITLE OF COURSE (NAME OF PAPER): Molecular structure-II		
COURSE CONTENT	**OBJECTIVES**	**OUTCOME**
Electrical Properties of Molecules Electric dipole moment of molecule, polarization of a dielectric, polarizability of molecules, Clausius-Mossotti equation. Debye equation, Limitation of the Debye theory, determination of dipole moment from dielectric measurements in pure liquids and in solutions. Dipole moment and ionic character, Bond moment, Group moment, vector addition of moments, bond angles, the energies due to dipole-dipole, dipole-induced dipole and induced dipole-induced dipole interaction. Lennard-Jones potential.	**To Review of the knowledge of** Electric dipole moment of molecule, polarization of a dielectric, polarizability of molecules, Clausius-Mossotti equation. Debye equation, Limitation of the Debye theory, determination of dipole moment from dielectric measurements in pure liquids and in solutions. Dipole moment and ionic character, Bond moment, Group moment, vector addition of moments, bond angles, the energies due to dipole-dipole, dipole-induced dipole and induced dipole-induced dipole interaction. Lennard-Jones potential.	**Students should understand**. Electric dipole moment of molecule, polarization of a dielectric, polarizability of molecules, Clausius-Mossotti equation. Debye equation, Limitation of the Debye theory, determination of dipole moment from dielectric measurements in pure liquids and in solutions. Dipole moment and ionic character, Bond moment, Group moment, vector addition of moments, bond angles, the energies due to dipole-dipole, dipole-induced dipole and i interaction. Lennard-Jones
The Magnetic properties of Molecules: Diamagnetism and paramagnetism. Volume and mass susceptibilities.	**To Review of the knowledge of** Diamagnetism and paramagnetism. Volume and mass susceptibilities. Lengevins classical	**Students should understand** Diamagnetism and paramagnetism. Volume and mass susceptibilities. Lengevins classical

Lengevins classical theory of diamagnetism and paramangenetism. Atomic and ionic susceptibility. Pascal constants, Curie- Weiss law. Van Vleck general equation of magnetic susceptibility. Determination of magnetic susceptibility, Gouy method. Ferro and ferri magnetism, application to coordination complexes and complex ions of transition metals.	theory of diamagnetism and paramangenetism. Atomic and ionic susceptibility. Pascal constants, Curie- Weiss law. Van Vleck general equation of magnetic susceptibility. Determination of magnetic susceptibility, Gouy method. Ferro and ferri magnetism, application to coordination complexes and complex ions of transition metals.	theory of diamagnetism and paramangenetism. Atomic and ionic susceptibility. Pascal constants, Curie- Weiss law. Van Vleck general equation of magnetic susceptibility. Determination of magnetic susceptibility, Gouy method. Ferro and ferri magnetism, application to coordination complexes and complex ions of transition metals.

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